1 **WITH TEMPERATURE COMPENSATION**
2 **ONE WORKING MEMBER RECIPROCATES AND ANOTHER ROTATES COMMON OUTPUT MEMBER**
3 **WITH DISENGAGEABLE ROTARY DRIVE FOR MOVING WORKING MEMBER**
5 R **WITH (1) SIGNAL OR INDICATOR OR (2) INSPECTION WINDOW IN EXPANSIBLE CHAMBER WALL PORTION**
5 L .With lock
6 R **EFFECTIVE AREA OF WORKING MEMBER END FACE SELECTIVELY VARIABLE**
6 D .With diaphragm
7 **WITH OVERCENTER MEANS TO BIAS WORKING MEMBER IN OPPOSITE DIRECTIONS OVER DIFFERENT PORTIONS OF STROKE**
8 **WITH MEANS TO CONTROL FLOW OF NON-WORKING ARRESTING FLUID FOR WORKING MEMBER**
9 .Flow control means positioned between chambers having a common wall movable with working member
10 .Work member position control
11 ..With auxiliary adjustable throttle (12)
12 .Adjustable throttle (11)
12.1 **DISPLACEMENT CONTROL OF PLURAL CYLINDERS ARRANGED IN PARALLEL, RADIAL, OR CONICAL RELATIONSHIP WITH ROTARY TRANSMISSION AXIS**
12.2 .Parallel cylinders
13 ..WITH ADJUSTABLE MEANS TO VARY STROKE OF WORKING MEMBER
13.1 .Having motor-operated adjustment
13.2 .Flexible wall-type working member
13.3 .Stroke of one working member adjustable relative to another
13.4 .Predetermined discrete incremental adjustment positions
13.41 ..Adjustment by assembly or disassembly
13.5 .Independent adjustment of opposite stroke limits of single reciprocating working member
13.51 .Axial adjustment of spaced, rigidly interconnected working member faces
13.6 .Adjustable abutment positioned within working chamber
13.7 .BY adjusting or limiting motion of relatively movable power transmission element
13.8 .Adjustment means includes external axially extending threaded piston stem
14 **WORKING MEMBER MOVES LOAD AND LATCHING MEANS FOR LOAD**
15 **WITH RELEASABLE STOP OR LATCH MEANS TO PREVENT MOVEMENT OF WORKING MEMBER**
16 .With timing or delay means
17 .Engages member coaxial with and rotatable relative to working member
18 .Includes interfitting parts engageable at plural positions including position intermediate stroke limits
19 ..Self-engaging
20 .Engages power element movable relative to working member
21 R .Plural selectively operable actuators for releasable means
21 MR ..Manual release
22 .Relatively movable working members with interdependent means
23 .Means includes element interfitting between working member and fixed part
24 ..Element actuated or retained in operative position by relatively movable fluid responsive member
25 ...With pivoted link between element and member
26 ...Resilient element
27 ..Fluid actuated (28)
28 .Fluid actuated (27)
29 **WITH RELEASABLE LATCH MEANS BETWEEN WORKING MEMBER AND POWER TRANSMISSION ELEMENT AXIALLY SLIDABLE THEREIN**
30 **WITH RESILIENT DETENT**
31 **RECTILINEARLY MOVING WORKING MEMBER AND COAXIAL OR PARALLEL ELEMENT SLIDABLY INTERENGAGED FOR RELATIVE ROTARY MOVEMENT**

32 .Working fluid-actuated interengaging means permits unidirectional rotation of element relative to fixed part
33 .Element extends through working member portion
34 **BELLOWS TYPE EXPANSIBLE CHAMBER**
35 .Expansible chamber formed by concentric bellows
36 .With non-bellows type expansible chamber
37 .Plural bellows
38 ..Non-working liquid moved by first bellows effects movement of second bellows
39 ..With common movable wall
40 .With separate biasing means
41 .With vibration damping means
42 .With separate ring-like reinforcing element abutting pleat
43 .With stop means to limit axial movement of bellows
44 .With guide means
45 .Superposed peripherally interconnected elements
46 ..With nonmetallic portion
47 .Specific or diverse material (103)
48 **PLURAL FLEXIBLE WALL WORKING MEMBERS**
49 .Diaphragm type having working fluid contacting areas of different size
50 .Oppositely movable walls of common chamber (69) (75)
51 **MUTUALLY RELATIVELY MOVABLE CYLINDER OR SLEEVE, MEMBER SEALINGLY SLIDABLE THEREIN AND OUTER CYLINDER THEREFOR**
52 .Cylinder or sleeve forms working member
53 .With additional cylinder relatively slidable exteriorly of outer cylinder
54 **ROTATING CYLINDER**
55 .Fluid conduit coaxial with axis of rotation
56 .Plural cylinders
57 ..Axes of cylinders parallel to axis of rotation
58 ..Axes of cylinders intersect axis of rotation at common point
58.1 **KNOCKDOWN OR FLOW CONDUIT STORAGE OR RETRIEVAL MEANS**
59 **CONVERTIBLE, OR CHANGEABLE BY ASSEMBLY OR DISASSEMBLY**
60 **WITH FLEXIBLE OR RESILIENTLY BIASED NON-WORKING MEMBER MOVABLE WALL IN CONSTANT COMMUNICATION WITH WORKING CHAMBER**
60.5 **SELECTIVE CLEARANCE CONTROL**
61 **RELATIVELY MOVABLE WORKING MEMBERS**
62 .First working member moves second coaxial working member through separating abutment surfaces
63 ..With separate biasing means for a working member
64 .One a flexible wall type
65 .Rigid stem on first working member portion extends through second working member
66 .Moving cylinders
67 .Oscillating working members
68 .Interconnected with common rotatable shaft
69 R ..Oppositely movable walls of common chamber (50) (75)
70 ...Shaft axis parallel to axes of working members (71)
69 A ...One piston rod passes through opposite piston rod
69 B ...Single crankshaft offset from center of work chamber
71 ..Shaft axis parallel to axes of working members (70)
72 ..Shaft axis intersected by axes of working members
73 ...Parallel working members
74 ....Shaft extends transversely through working members
75 .Oppositely movable walls of common chamber (50) (69)
76 .Interconnected by linkage having relatively movable members
77 **GROUND EMBEDDED EXPANSIBLE CHAMBER**
78 **WITH FLUID PURIFYING MEANS**
79 .Means separates gas from liquid
80 **WITH FORCE EXERTING MEANS TO MOVE FLUID FROM NON-WORKING CHAMBER**
81 **WORKING MEMBER FORMS RESERVOIR FOR NON-COMPRESSIBLE WORKING FLUID**

82 **WITH MEANS TO CONTROL FLUID FLOW FROM NON-WORKING CHAMBER**
83 **LIQUID POOL SEALING RELATIVELY MOVABLE CHAMBER WALLS**
84 **RESILIENT MEANS INTERPOSED BETWEEN WORKING MEMBER AND RELATIVELY MOVABLE POWER TRANSMISSION ELEMENT**
85 R **WITH CUSHIONING MEANS EFFECTIVE OVER A PORTION ONLY OF STROKE**
85 A .Metal spring
85 B .Fluid spring
86 **WITH REMOVAL CONDUIT FOR LIQUID SEEPAGE FROM EXPANSIBLE CHAMBER**
86.5 **PASSAGE IN CYLINDER FOR APPLICATION OF SEPARATE FLUID TO CYLINDER AND PISTON SIDE WALL INTERFACE**
87 **WITH NON-SEALING CLEANING MEANS**
88 **SEALED OPENING IN LONGITUDINAL WALL OF CHAMBER FOR RECEIVING WORKING MEMBER PORTION**
89 **COLLAPSIBLE CHAMBER WALL PORTION (E.G., HINGED OR FLEXIBLE WALL)**
90 .Wall portion formed of flexible material
91 ..Envelope having restricted fluid opening
92 ...Non-metallic
93 ..Annular flexible wall portion peripherally sealed to spaced relatively fixed concentric rigid members
94 ..With separate biasing means
95 ...Adjustable
96 ..Diaphragm type
97 ...Axially spaced flexible wall portions with interposed incompressible means
98 R ...Entire periphery secured to rigid working chamber forming wall
99 ....With undistortable member secured to central portion of diaphragm
100 .....Member includes coextensive plate-like elements secured to opposite side of diaphragm
101 ....Abutment connection between diaphragm and power transmission element
102 ....With separate seal means between diaphragm and member
98 D ....Rolling diaphragm
103 R ...Specific or diverse material (47)
103 F ....With reinforcement embedded in diaphragm
103 SD ....Synthetic diaphragm (non-metal and non-rubber)
103 M ....Metal diaphragm
104 ...Corrugated
105 ..Coaxial radially spaced relatively movable undistortable members joined by flexible wall
106 **FLUID CONDUIT IN CONSTANT COMMUNICATION WITH RELATIVELY ROTATABLE WORKING CHAMBER**
107 **ANNULAR WORKING MEMBER OR ANNULAR LINEARLY EXTENDING CHAMBER THEREFOR**
108 .Axially extending hollow stem on working member
109 **PISTON WITH RIGID AXIALLY EXTENDING HOLLOW STEM**
110 .Hollow stem forms axially extending fluid passage
111 ..Plural laterally spaced passages
112 ..Passage communicates with lateral port extending through piston side wall portion
113 .Relatively movable elongated part within stem
114 ..Part and stem relatively axially adjustable
115 ...Part forms actuator for piston side wall portion adjusting means
116 **WITH AXIALLY EXTENDING ELEMENT MOUNTED ON WORKING MEMBER FOR RELATIVE ROTARY MOVEMENT ONLY**
117 R **MOVING CYLINDER**
118 .Pivoted
119 ..With fluid conduit extending through pivoted connection
117 A .Stationary piston or movable piston with moving cylinder
120 **OSCILLATING WORKING MEMBER OR CYLINDER THEREFOR**
121 .Oscillatory shaft with radially extending vane
122 ..Plural angularly related vanes
123 ..With lost motion connection between vane and shaft
124 ..With resiliently biased vane peripheral portion

125 ..Vane includes non-metallic peripheral sealing portion
126 **WITH DIFFERENTIAL RADIAL THRUST PRODUCING MEANS FOR WORKING MEMBER**
127 .Fluid pressure type
128 **WITH ASSEMBLY OR DISASSEMBLY FACILITATING MEANS**
129 **ABUTMENT CONNECTION BETWEEN WORKING MEMBER AND POWER TRANSMISSION ELEMENT**
130 R **WITH SEPARATE BIASING MEANS FOR WORKING MEMBER**
131 .Biasing means maintains working member intermediate stroke end limits
132 .Tension spring
133 .Adjustable
134 .Fluid spring
135 .Biasing means engages working fluid contacting portion of working member
130 A .Bias normally held inoperative by fluid pressure
130 B .Bias other than coil spring
130 C .Bias external of both expanding and contracting chamber
130 D .Plural coil springs
136 **WITH TOOTHED GEAR, SPLINE OR THREAD RIGID WITH WORKING MEMBER**
137 **WITH FLEXIBLE TRANSMISSION ELEMENT SECURED TO WORKING MEMBER**
138 **WITH LINKAGE OR TRANSMISSION ENGAGING PORTION INTERMEDIATE SPACED WORKING MEMBER END FACES**
139 **WITH CYLINDER WALL CONTACTING GUIDE ARTICULATED TO PISTON**
140 **WITH LINKAGE OR TRANSMISSION HAVING RELATIVELY MOVABLE MEMBERS**
141 **WITH SEPARABLE FLUID DEFLECTING SHIELD OR BAFFLE ON WORKING MEMBER**
142 **WITH RESERVOIR FOR NON-COMPRESSIBLE WORKING FLUID**
143 **WITH MOVEMENT DAMPING MEANS (E.G., FLUID FLOW RESTRICTOR)**
144 **WITH ENCOMPASSING HEAT EXCHANGE MODIFYING SPACE OR JACKET**
145 **COMBINED**
146 **PLURAL UNITARILY MOUNTED CYLINDERS OR FRAME THEREFOR (161)**
147 .With casing or support for rotary shaft
148 ..Three or more radially arranged cylinders
149 ..V-type
150 ..Coaxial cylinder (151)
151 .Coaxial cylinders (150)
152 ..With different cross-sectional areas
153 **WITH LUBRICATING MEANS**
154 .Lubricant entrained by working fluid
155 .Portion of expansible chamber device includes solid lubricating material
156 .Valve means in lubricant passage
157 .Lubricant passage extends axially through articulated piston rod
158 .Piston has lubricant retaining or conducting means
159 ..Pocket or chamber
160 ..Port or passage extending through side wall portion
161 **WITH SUPPORT OR FRAME (146)**
161.5 .Wheel supported
162 R **SPACED CYLINDER AND PISTON WALLS DEFINE PASSAGE BETWEEN OPPOSED PISTON SIDE WALL ENDS**
162 P .Passage in piston
163 **FLUID CONDUIT OR PORT IN FIXED WALL OF WORKING CHAMBER**
164 .Port in separable chamber end closure
165 R **WITH GUIDE OR SEAL ON CYLINDER END PORTION FOR PISTON OR MEMBER MOVED BY PISTON**
166 .Additional guide is spaced chamber end wall
167 .Guide movable laterally
168 .Non-metallic seal means between piston or member and end portion
165 PR .Prevent rotation
169.1 **CYLINDER DETAIL**
169.2 .With reinforcing member
169.3 ..Extending through working member
169.4 ...Coaxial sleeve or tube
170.1 .Nonmetallic piston contacting portion

171.1 .Cylinder or liner retained in casing by casing closure or closure associated means
172 **PISTON**
173 .With rotation imparting fluid impinging surface on piston part
174 .Liquid between axially spaced side wall portions
175 .Spaced faces joined by rigid stem (e.g., spool)
176 .With enclosed insulating space in piston part
177 .Non-circular
178 .With ball or roller anti-friction means on side wall portion
179 .Articulated connecting rod end forms portions of piston face
181 R .With fluid passage in piston face
182 ..Passage communicates with packing receiving recess
183 ...Valved
184 ...Passage in opposed piston faces
185 ....Passages communicate with common packing receiving recess
181 P ..Passage thru piston to opposite chamber
186 .With ported chamber in piston part for circulating heat exchange fluid
187 .With separable means for pivotally mounting connecting rod to piston
188 ..Means retained by annulus positioned about piston periphery
189 ..Piston formed of separable end face and side wall portion
190 ...Means secures end face portion to side wall portion
191 ..Fastener for separable means extends through end face portion
192 .Plural integral radially extending resilient metallic sealing tongues on side wall portion
193 .With spring means for biasing side wall portion radially
194 ..Biased portion comprises peripheral axially extending flexible lip
195 ..Open ended hollow skirt comprises biased portion
196 ...Spring part positioned in skirt slit
197 ...Adjustable bias (199)
198 ...Split annular type spring (200)
199 ..Adjustable bias (197)
200 ..Split annular type spring (198)
201 .Radially adjustable side wall portion
202 ..Adjustable portion comprises open-ended hollow skirt
203 ...Adjustment effected by wedge member movable relative to skirt (207)
204 ..Adjustment effected by selectively removable spacer or skim element between relatively movable parts
205 ..Side wall portion positioned between relatively axially adjustable rigid end members
206 ...With beveled abutting surfaces between side wall portion and an end member
207 ..Adjustment effected by wedge member movable relative to side wall portion (203)
208 .Open-ended hollow skirt type (e.g., trunk type)
209 ..Frusto conical skirt
210 ..With weight balancing means
211 ..Element of diverse material extending through skirt wall abuts circumferentially extending resilient ring
212 ..With nonmetallic portion
213 ..End face surface includes areas of diverse material
214 ..Spaced wall skirt
215 ..Separate resilient elements secures end face portion to skirt portion
216 ..Plural separable parts
217 ...Interconnected by relative rotation of parts
218 ....With means to prevent relative rotation of parts
219 ...Interconnected without separate fastening means
220 ...Threaded fastener

221 ....Fastener extends through end face
222 ..Specific or diverse material; or welded, brazed or soldered joint
223 ...Coated
224 ...End face and skirt periphery of diverse material
225 ...Element of diverse material for limiting radial movement of skirt part
226 ....Bi-metallic restraining element
227 ....Element positioned about periphery of skirt
228 ....Element portion embedded in piston part
229 .....Annular element
230 ......Element encircles connecting rod pin supporting boss
231 ...Welded, brazed or soldered (260)
232 ..Spaced skirt parts jointed by resilient arcuate web
233 ..Oval-shaped skirt portion
234 ..Skirt includes slit
235 ...Slit transverse to skirt axis
236 ....With additional angularly related slit
237 ..Circumferentially spaced portions at free end of skirt
238 ..Connecting rod pin supporting boss laterally spaced from skirt portion
239 ..With rib or strut means on piston part
240 .Side wall portion includes peripheral axially extending flexible lip
241 ..With embedded reinforcing means in lip portion (254)
242 ..Plural axially spaced lips
243 ...Oppositely facing
244 ....Lips formed on separable elements
245 ..Lip forms peripheral portion of imperforate cup shaped element
246 ..Metallic lip
247 .Fluid pressure responsive axial movement of end face portion radially moves side wall portion
248 .Nonmetallic portion
249 ..Flexible
250 ...Flexible side wall portion between separable axially spaced rigid members
251 ....Wall portion comprises plural axially aligned flexible elements
252 .....Three or more elements
253 ...Axially spaced flexible side wall forming elements with interposed rigid spacer member
254 ...With imbedded reinforcing means (241)
255 .Plural separable parts
256 ..Fastening means for parts include resilient element
257 ..Side wall portion interposed between separable axially spaced rigid members
258 ...Rigid members connected by coaxial rigid stem or rod
259 ..Side wall portion and relatively movable piston part having abutting inclined surfaces
260 .Welded, brazed or soldered (231)
261 **MISCELLANEOUS (E.G., CRANKCASE)**

FOREIGN ART COLLECTIONS

FOR **CLASS-RELATED FOREIGN DOCUMENTS**

DIGESTS

DIG 1 **BEARING ON PISTON OR CYLINDER**
DIG 2 **FLUID BEARING**
DIG 3 **FLEXIBLE DRIVE**
DIG 4 **LOST MOTION**